

IV. REMARKS

1. The specification is amended. Claims 1, 11,13 and 14 are amended. Application appreciates the Examiner's indication of allowable subject matter in claims 4-8, but respectfully submits that the claims should be allowable in their present form for the reasons stated below.

2. Claims 13 and 14 are amended to address the 35 U.S. C. §112, second paragraph rejection.

3. Claims 1-3, 9, 11 and 12 are not anticipated by Kendall et al. ("Kendall") under 35. U.S.C. §102(b).

Claim 1 of Applicant's invention recites establishing a direction dependent filtering arrangement and a set of parameters to model how sound is directed from the at least one sound source belonging to the acoustical virtual environment. This is not disclosed or suggested by Kendall.

Kendall does not disclose or suggest modeling anisotropy of a sound source, i.e., how a sound source sound when listened to from different directions.

The direction dependent filtering arrangement in the present application is a means for modeling anisotropy of a sound source, i.e. how a sound source sounds when listened to from different directions (see e.g. Figures 3 and 4 of the present application). The operation of a system described in the present application is based on modifying a spectrum of a sound signal with a transfer function that depends on a modeled listening direction in respect of a sound source. This is totally a different principle than the principle based on directionalizers referred to by Kendall. Kendall describes a system that models sound reflections to

create for a listener an illusion of reflection from many directions. The system comprises reverberation means for producing signals modeling reflected sound waves and directionalizing means for producing for a listener an illusion of a certain localization of a sound image.

The reverberation means produce at least one additional signal (1..M in figure 2A in Kendall) that models sound waves reflected from surfaces, e.g. walls, around a sound source. (e.g. column 8, lines 31-37 in Kendall). Therefore, the reverberation means model acoustical properties of the physical surroundings of the sound source, e.g. acoustics of a room. A direction dependent filtering arrangement described in the present application models anisotropy of a sound source, i.e. the fact that a sound source sounds different when listened to from different directions in respect of the sound source. Therefore, when describing the reverberation means Kendall does not teach to make an arrangement that models how a sound source sounds when listened to from different directions around the sound source.

Kendall only refers to directionalizers. Kendall does not describe the directionalizers in detail but incorporates in column 6, rows 45-48 Kogure et al. (U.S. Patent No. 4,219,696) as a reference. Kogure only reveals that the directionalizers are means for producing frequency dependent delay and amplitude differences on different output channels in order to give the listener an illusion of a sound image from a desired direction, in the case where two loudspeakers are located in front of him and as well as on the left and right sides of him (column 1, rows 5-11). The operation of the system is based on mutual amplitude and phase difference of sound waves emitted by at least two loudspeakers/earphones. Neither Kendall nor Kogure teach how to

model/or anistrophy of a sound source, i.e. how a sound source sounds when listened from different directions.

The principal difference is illustrated e.g. by the fact that the system described in the present application is able to operate even if there is only one loudspeakers/earphone. The operation of the directionalizers as in Kendall and Kogure is based on the fact that there is always at least two loudspeakers/earphones or the like. Neither Kendall nor Kogure disclose or suggest a situation in which there is only one sound source, as is recited in Applicant's claim.

Thus, Kendall does not teach to use a filtering arrangement that models how a sound source sounds when listened from different directions, and cannot anticipate claim 1.

Claim 11 is similarly not anticipated.

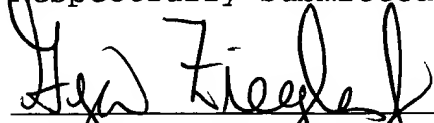
Claims 2-3, 9 and 12 are also not anticipated at least by reason of their respective dependencies.

4. Claim 10 is not unpatentable over Kendall in view of Asayama under 35 U.S.C. §103(a) at least in view of its dependency on claim 1. Additionally, Asayama also does not disclose or suggest using direction dependent filtering arrangement to model how a sound source sounds when listened from different directions.

For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record, and are in proper form for allowance. Accordingly, favorable reconsideration and allowance is respectfully requested. Should any unresolved issues remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

A check in the amount of \$1,020.00 is enclosed for a three-month extension of time. The Commissioner is hereby authorized to charge payment for any fees associated with this communication or credit any over payment to Deposit Account No. 16-1350.

Respectfully submitted,



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17 November 2005

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I hereby certify that this correspondence is being deposited with the United States Postal Service on the date indicated below as first class mail in an envelope addressed to MAIL STOP AMENDMENT, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Date: 17 November 2005

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